UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/054,752	01/22/2002	Joergen Rasmusen	45900-000719	5864

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EXAMINER
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ART UNIT	PAPER NUMBER
2625	

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/054,752	RASMUSEN, JOERGEN
	Examiner	**Art Unit**	
	Manav Seth	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>22 January 2002</u>.

2a)☐ This action is **FINAL.**   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-30</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-3 and 19-21</u> is/are rejected.

7)☒ Claim(s) <u>4-18 and 22-30</u> is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>03/19/2002</u>.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____ .

DETAILED ACTION

Specification

1.   The disclosure is objected to because of the following informalities:

The specification in lines 23-31 of page 6 is not consistent with figure 3. Figure 3 discloses the **element number 18 being assigned to second array** and **the element number 17 being assigned to third array**. However, the specification cites second array being element 17 and third array being 18. Appropriate correction is required.

Claim Objections

2.   **Claim 19** is objected to because of the following informalities:

The last limitation "assigning the part of the data representation of said second image not contained in the intersection to a third part of the data representation of the stitched image" of Claim 19 ends with a comma (,), whereas it should end with a period (.) as it being the last limitation of the claim. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4.   Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by Hirahara et al., U.S.

Patent. No. 4,692,812.

      Claim 1 recites "a method for stitching at least a first line shaped image and at least a second

line shaped image, said first image having an image part intersecting an image part of said second

image, said first image being represented by at least a first array of adjacent pixel values, said second

image being represented by at least a second array of adjacent pixel values". Hirahara discloses in

figure 7 and in column 7, lines 45-68 through column 8, lines 1-30, a method for stitching at least a

first line shaped image (56) and at least a second line shaped image (60), said first image having an

image part intersecting (overlap signal, also see figure 2: element 19) an image part of said second

image, where apparently first and second images are nothing but an array of pixels adjacent to each

other.

      Claim 1 further recites "locating the part of the first array that is included in the intersection

of said images, and locating the part of the second array that is included in the intersection of said

images". Clearly from figure 7 and (col. 7, lines 45-68), only the overlap or intersection part of the

first array and second array are multiplied with coefficients and this can only be done by first

locating the parts in the overlapped or intersection regions of the both arrays.

      Claim 1 further recites "defining, in at least a third array, a representation of the stitched

image by (1) assigning the pixel values of the part of the first array outside the intersection to a first

part of said third array, (2) assigning pixel values to represent the intersection of the at least two

images to a second part of said third array, said pixel values being calculated by applying at least a

first function to the corresponding pixel values of the intersecting parts of said first and second

arrays, and (3) assigning the pixel values of the part of the second array outside the intersection to a

third part of said third array". As cited in figure 7, Hirahara discloses the image parts not in the

overlap or intersection area are directly assigned to the third array (64) parts and the image parts (or

pixels) that occur in overlap regions are manipulated by applying a first function **(weighted sum)**

and then the values are assigned to third array (64). Further support can be found in (col. 7, lines 45-

68 through col. 8, lines 1-28; col. 12, lines 64-68, through col. 13, lines 1-30).

Claim 2 recites "a method according to claim 1, wherein the said first function calculates a

weighted sum". Claim 2 has been similarly analyzed and rejected as per claim 1. However, further

support can be found in (col. 7, lines 45-68; col. 3, lines 46-56; col. 12, lines 28-42).

Claim 3 recites "a method according to claim 2, wherein the sum of weights multiplied to

the pixel values when calculating the weighted sum equals 1 for all pixels included in the

intersection". Hirahara provides support for the above limitation in (col. 13, lines 1- 45).

Claims 19-21 recites a system to perform the method similarly recited in claims 1-3.

Hirahara discloses the use of a system, which uses a microcomputer (figures 4, 5 and 18) and

apparently as well known a microcomputer would not work without a program to perform the

process desired. All other limitations in claims 19-21 have been similarly analyzed and rejected as per

claims 1-3.

5.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in
> the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent

by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6.   Claims 1-3 are rejected under 35 U.S.C. 102(e) as being anticipated by Walsh, U.S. Patent.

No. 6,181,441.

Walsh discloses a method for stitching at least a first line shaped image and at least a second

line shaped image, said first image having an image part intersecting an image part of said second

image, said first image being represented by at least a first array of adjacent pixel values, said second

image being represented by at least a second array of adjacent pixel values (col. 2, lines 9-18; col. 3,

lines 1-68; figure 4, element 30 being first array and element 32 being second array).

Walsh further discloses locating the part of the first array that is included in the intersection

of said images, and locating the part of the second array that is included in the intersection of said

images (figure 4, col. 3, lines 35-68) and further support can be found in (col. 5, lines 1-55) where

only the overlap or intersection part (or pixels) of the first array and second array are weighted

averaged and this can only be done by first locating the parts in the overlapped or intersection

regions of the both arrays.

Walsh further discloses defining, in at least a third array, a representation of the stitched

image by (1) assigning the pixel values of the part of the first array outside the intersection to a first

part of said third array, (2) assigning pixel values to represent the intersection of the at least two

images to a second part of said third array, said pixel values being calculated by applying at least a

first function to the corresponding pixel values of the intersecting parts of said first and second

arrays, and (3) assigning the pixel values of the part of the second array outside the intersection to a

third part of said third array (col. 3, lines 35-38; col. 4, lines 9-68 through col. 5, lines 1-55; figure 6,

element 44 being the third array, which includes non overlapped portion from first array and second

array and an overlapped portions which were further weighted summed and then assigned to the

third array).

Claim 2 recites "a method according to claim 1, wherein the said first function calculates a

weighted sum". Claim 2 has been similarly analyzed and rejected as per claim 1. However, further

support can be found in (col. 2, lines 9-18; col. 5, lines 1-55; col. 6, lines 1-68).

Claim 3 recites "a method according to claim 2, wherein the sum of weights multiplied to

the pixel values when calculating the weighted sum equals 1 for all pixels included in the

intersection". Walsh provides support for the above limitation in (col. 5, lines 1- 55), emphasizing

more on equation in line 1 of col. 5, where assuming pixel in first array at position 4896 has a gray

value of 1 and pixel in second array at position 96 has a gray value of 1, the equation would result in

weighted sum of 1.

Claims 19-21 recites a system to perform the method similarly recited in claims 1-3.

Hirahara discloses the use of a system (figures 2 and 3; col. 3, lines; col. 8, lines 5-15). All other

limitations in claims 19-21 have been similarly analyzed and rejected as per claims 1-3.

Allowable Subject Matter

Reasons of Allowance:

7.   Claims 4-18 and 22-30 are objected to as being dependent upon a rejected base claim, but

would be allowable if rewritten in independent form including all of the limitations of the base claim

and any intervening claims.

The following is an examiner's statement of reasons of allowance:

The instant invention is directed to a method of image stitching or image combining in

which the overlapped image portions are further manipulated by using weighted sum to provide a

continuous image The instant invention and the closest prior art (Walsh, U.S. Patent No. 6,181,441)

both provide weighted sum to compensate the overlap pixel values, however, the instant invention

further recites "wherein a first and second pixel included in the intersection are selected, and the

weights applied to the pixel values when stepping through the first array equals 1 before reaching

said first selected pixel, then the weight is decreasing or unchanged pixel by pixel and when reaching

the pixels after said second selected pixel, the weight equals 0" as recited in claims 4 and 22 and

further recites "wherein a first and second pixel included in the intersection are selected, and the

weights applied to the pixel values when stepping through the first array equals 0 before reaching

said first selected pixel, then the weight is increasing pixel by pixel and when reaching the pixels after

said second selected pixel, the weight equals 1" as recited in claims 5 and 23, which is not taught by

the closest prior art of record. Therefore, claims 4, 5, 22 and 23 are allowed. All other claims

depending on claims 4, 5, 22 and 23 are allowed at least by dependency on claims 4, 5, 22 and 23.

Conclusion

6.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Suganuma et al., U.S. Patent No. 5,220,626, discloses a method of smoothly combining signals from overlapping sensors.

- Crean et al., U.S. Patent No. 4,147,928, discloses a scanning array configuration.

- Murakami, U.S. Patent No. 4,712,134, discloses image reader with plural pickup elements reading overlapping image regions of an original image.

- Hirota, U.S. Patent No. 5,003,380, discloses image reading apparatus having plural line image sensor chips.

- Hasegawa et al., U.S. Patent No. 4,691,114, discloses original reader with variable magnification and time delay.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Manav Seth whose telephone number is (571) 272-7456. The examiner can normally be reached on Monday to Friday from 8:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta, can be reached on (571) 272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR system,

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contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Manav Seth
Art Unit 2625
January 17, 2006

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